Alaska Department of Fish and Game
Division of Wildlife Conservation
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Interrelationship of Forage and Moose in Game Management Unit 13

William B. Collins

Research Performance Report
1 July 1999–30 June 2000
Federal Aid in Wildlife Restoration
Grant W-27-3, Study 1.50

This is a progress report on continuing research. Information may be refined at a later date.

ALASKA DEPARTMENT OF FISH AND GAME FEDERAL AID ANNUAL RESEARCH PERFORMANCE REPORT

PROJECT TITLE: Interrelationship of Forage and Moose in Game Management Unit 13

AUTHOR: William B. Collins

COOPERATORS: None

GRANT AND SEGMENT NR.: W-27-3

PROJECT NR.: 1.50

SEGMENT PERIOD: 1 July 1999 – 30 June 2000

WORK LOCATION: GMU 13 – Nelchina Basin, Alaska

STATE: Alaska

I. PROGRESS ON PROJECT OBJECTIVES

OBJECTIVE 1: Describe moose diets and browse utilization. Winter feeding sites of moose have been examined 4 years. Unexpected large quantities of dwarf birch and diamond willow were observed to have been utilized relative to the amount of utilized feltleaf willow. Twenty permanent transects in the Tyone and Oshetna River drainages have been "read" in late winter for 6 years to determine percent utilization of feltleaf willow. As these have been correlated with winter severity and moose distribution, it has become apparent that moose do not preferentially browse the riparian willow community during years of relatively little snow accumulation. This is noteworthy because the riparian vegetation is the most accessible and consists primarily of feltleaf willow, the species believed to be most preferred. Chemical analyses of these species from the locale in question may help explain unexpected preferences.

OBJECTIVE 2: Determine nutritional quality of principal foods. Samples of browse species found in winter diets of moose have been analyzed for neutral detergent fiber, acid detergent fiber, lignin, cellulose, cutin, dry matter, and ash. Analysis of phenolic compounds has not been completed.

OBJECTIVE 3: Estimate availability of principal browse species and associated nutrients relative to moose distribution and snow depth. Qualitative assessment of availability has been made.

OBJECTIVE 4: Document effects of browsing history on shrub structure, shrub productivity/survival, browse availability and browse quality. Feltleaf willow stands have been fenced to exclude moose at 4 locations in the Tyone and Oshetna River drainages. Within each exclosure, willows have been hand clipped each year for 4 years to represent 0, 30, 60, and 90% utilization. Samples of current annual growth from each of 30 individuals within each utilization treatment and within each exclosure were collected at year 4. These samples have been analyzed for neutral detergent fiber, acid detergent fiber, lignin, cellulose, cutin, dry matter and ash. Analysis of phenolic compounds remains to be completed for this objective.

II. SUMMARY OF WORK COMPLETED ON JOBS IDENTIFIED IN ANNUAL PLAN THIS PERIOD

Seasonal diets. Twenty permanent transects in the Tyone and Oshetna River drainages were "read" in late winter to determine percent utilization of feltleaf willow. This extended the series of annual measurements to 6 years (Table 1), which will allow correlation with winter severity (snow depth) and moose distribution.

Diet quality. Major nutritional components of dwarf birch, diamond willow and feltleaf willow samples from the Tyone and Oshetna River drainages were determined. These included: neutral detergent fiber, acid detergent fiber, lignin, cellulose, cutin, dry matter, and ash. Additional extractions from each of the same willow samples were made for phenolic determinations.

Winter browse availability. No additional work was done on this job.

Browsing effects. Chemical analyses of feltleaf willow current annual growth, representing 0, 30, 60, and 90% utilization treatments from each of 4 exclosures in the Tyone and Oshetna River drainages, were conducted. These included: neutral detergent fiber, acid detergent fiber, lignin, cellulose, cutin, dry matter, and ash. Additional extractions from each of the same willow samples were made for phenolic determinations.

III. ADDITIONAL FEDERAL AID-FUNDED WORK NOT DESCRIBED ABOVE THAT WAS ACCOMPLISHED ON THIS PROJECT DURING THIS SEGMENT PERIOD

The following manuscripts were prepared for publication:

William B. Collins. Heavy grazing of Canadian bluejoint to enhance hardwood and white spruce regeneration. Northern J. Applied Forestry

William B. Collins, Earl F. Becker, and Alison B. Collins. Canadian bluejoint response to heavy grazing. J. Range Manage.

William B. Collins, and E. F. Becker. Estimation of horizontal cover. J. Range Manage.

IV. FEDERAL AID TOTAL PROJECT COSTS FOR THIS SEGMENT PERIOD

$ 51,300

V. PREPARED BY:

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APPROVAL DATE: _____

Table 1. Percent utilization of feltleaf willow by moose. Standard deviations are in parenthesis.

Tyone Creek					Oshetna River			
1994	1995 1996	1996 1997	1997 1998	1998 1999	1999	1994	1995	
82 (22)	13 (12)	32 (12)	25 (10)	35 (13)	68 (25)	76 (16)	12 (13)	29
(10)	27 (10)	24 (14)	51 (22)					